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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,039	08/16/2001	Quintin T. Phillips	10006506-1	5060

7590 03/28/2005

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EXAMINER	
DIVINE, LUCAS	
ART UNIT	**PAPER NUMBER**
2624	

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/932,039	PHILLIPS ET AL.	
	Examiner	Art Unit	
	Lucas Divine	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *16 August 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/16/01, 12/13/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **10**. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 – 3, 7, 9 – 12, 16, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Tognazzini (US 6028674).

Regarding claim 1, Tognazzini teaches **an image forming device** (for example printer 340, Fig. 3) **comprising:**

an image engine configured to use a consumable to form a hard image (image engine of printer 340 is inherent in order to print a job [step 430, Fig. 4]); **and**

processing circuitry coupled with the image engine (printer 340 inherently includes a processor in order to complete the flow chart steps of Figs. 4-6) **and configured to:**

perform prediction operations with respect to the consumable (Fig. 4, operations 410, 440, and 460 as well as Fig. 6, operations 610 and 620 are prediction operations with respect to the amount of ink left in the consumable) **to predict a likelihood that an image job will be imaged** (step 620 determines whether the ink supply is too low to complete a job, thus print test routine is called [see Fig. 6]);

receive a change of use indication with respect to the consumable (Fig. 4 step 450, wherein the cartridge being used is changed and a 'YES' indication is received); **and**

modify the prediction operations responsive to the change of use (Fig. 4 step 420, wherein the prediction operations are modified because the print counter is reset, thus the prediction operations are not predicting with the same data).

Regarding claim 2, which depends from claim 1, Tognazzini further teaches **a memory** (inherent to the printer is a processor and memory to complete the necessary steps) **configured to store predictive data regarding usage of the consumable responsive to the formation of hard images** (thresholds and counters used in Fig. 4 are inherently stored in a memory in order

to perform the predictive operations), **and wherein the processing circuitry is configured to access the predictive data to perform the prediction operations** (in order to utilize a stored print counter, the processor inherently must access the memory that stores the variables).

Regarding claim 3, which depends from claim 2, Tognazzini further teaches **the processing circuitry is configured to reset the predictive data to modify the prediction operations** (Fig. 4 step 420, wherein the prediction operations are modified because the print counter is reset, thus the prediction operations are not predicting with the same data), **and wherein the memory is configured to store subsequent predictive data after the resetting** (the counter is thus incremented in step 440 after the resetting), **and the processing circuitry is configured to use the subsequent predictive data after the resetting to perform subsequent prediction operations after the resetting** (step 460 of Fig. 4, wherein the counter that was reset and incremented is used in the predictive process).

Regarding claim 7, which depends from claim 1, Tognazzini further teaches that the **processing circuitry is configured to suspend the prediction operations to modify the prediction operations** (when a change of use is indicated, in step 450, the predictive operation 460 is not enabled to complete because the modification of prediction operations is implemented in step 420, thus the prediction operations are thus suspended until another print job takes place).

Regarding claim 9, which depends from claim 1, Tognazzini further teaches that **processing circuitry is configured to verify the change of use indication responsive to receiving the change of use indication** (inherently included in step 450 is the verification that a cartridge is actually changed in order to provide accurate information to the printer system, therefore, if something the printer got jostled or if the same cartridge was taken out and put back

in, it would verify whether or not that cartridge was a change of use or not and issue a YES or NO accordingly), **and to modify the prediction operations responsive to the verification** (Fig. 4 step 420, wherein the prediction operations are modified because the print counter is reset, thus the prediction operations are not predicting with the same data).

Regarding claim 10, the structural elements of apparatus claim 1 perform all of the method steps of method claim 10. Therefore, claim 10 is rejected for the same reasons as stated above in the rejection of claim 1.

Regarding claim 11, which depends from claim 10, the structural elements of apparatus claim 2 perform all of the method steps of method claim 11. Therefore, claim 11 is rejected for the same reasons as stated above in the rejection of claim 2.

Regarding claim 12, which depends from claim 11, the structural elements of apparatus claim 3 perform all of the method steps of method claim 12. Therefore, claim 12 is rejected for the same reasons as stated above in the rejection of claim 3.

Regarding claim 16, which depends from claim 10, the structural elements of apparatus claim 7 perform all of the method steps of method claim 16. Therefore, claim 16 is rejected for the same reasons as stated above in the rejection of claim 7.

Regarding claim 18, which depends from claim 10, the structural elements of apparatus claim 9 perform all of the method steps of method claim 18. Therefore, claim 18 is rejected for the same reasons as stated above in the rejection of claim 9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naka et al. (US 6672695) and Samuels (US 5937225) hereafter as Naka and Samuels.

Regarding claim 21, Naka teaches **a method of operating printer** (500) **configured to use a consumable** (190) **to form hard images, the method comprising:**

printing a plurality of hard images (printers such as ink jet printer 500 print hard images);

storing data **upon a memory of the consumable** (EEPROM 210 stores data as shown in Fig. 2);

storing historical data regarding usage of the consumable responsive to the printing, wherein the storing historical data comprises storing upon the memory (Fig. 2 shows the storing of cartridge history in the EEPROM 210 of the consumable; col. 4 lines 1-15);

indicating a change of use of the consumable (Fig. 7 shows steps S3-10,12, and 14 which all detect whether or not the consumable being used has been changed and indicate their detected results);

verifying the change of use of the consumable after the indicating (Fig. 7 steps S3-11, 13, and 15 verify the change of consumable, either the consumable is new, has been here before, or is a non-new consumable from a different device);

maintaining the historical data (ink remaining amount is maintained in the consumable memory no matter what printer or application it is used with);

establishing confidence (steps S3-17, 18 are the final steps to establish confidence in a selected history number so that the estimation of ink remaining in step 4 [Fig. 5] is done with confidence).

While Naka teaches a system for detecting and handling the change of use of a consumable and to assess the ink consumption amount with confidence, Naka does not specifically express the using the history data to predict a likelihood that an image job will be imaged or resetting the predictive data in response to a change of use.

Samuels teaches **storing predictive data regarding usage of a consumable responsive to the printing** (global count 33 and job count 32, which predicts the anticipated consumable usage; col. 3 lines 38-42),

performing prediction operations with respect to the consumable using the predictive data to predict a likelihood that an image job will be imaged using the consumable (prediction is completed [col. 3 line 44] to determine the prediction of toner usage for a job and that job prediction is added to the global count and compared with a global threshold [col. 4 lines 1-4] to determine if the job can be completed [col. 4 lines 5-11]);

resetting the predictive data (reset signal 34 is used to reset the global count when the toner is refilled or a new cartridge is installed; col. 3 line 60);

acquiring subsequent predictive data after the resetting (as subsequent jobs are inputted to the system after a cartridge change of use, job count data 32 is acquired);

performing subsequent prediction operations after the reset the subsequent predictive data (predictions occur for each new print job after a toner cartridge is refilled or replaced).

It would have been obvious to one of ordinary skill in the art to combine the predictive elements of Samuels to the change of use system of Naka. The motivations for combining the Naka and Samuels would have been to combine the positive features of both inventions – predicting future toner usage and allowing for cartridges to have their use changed on the fly. Both systems are implemented with a host and a computer and include printing operations and consumable detections. In the combined system predictions of consumable usage (Samuels) would be completed using the history stored in the cartridge (Naka) as well as the predictive job count data (Samuels). When the use of a consumable is changed, meaning a new cartridge is detected or replaced, the combined system would indicate such a change (Naka), verify the change (Naka), and establish confidence in the predictions by determining which consumption amount is most accurate (Naka). Further which the change of use of a consumable, the system would reset the predictive data with the threshold data and global count data [now the consumable remaining amount of Naka] (Samuels). So the threshold would be the same, but the combined system could start off at a global count of Samuels of ½ the threshold if half of the ink has been used up as detected in the system of Naka. Further, subsequent predictions would occur with the new consumable (Samuels).

The system of Samuels would be more accurate because instead of the global count being reset to zero, the global count would be set at the remaining ink amount as determined by Naka. So the system of Samuels could benefit in the combined system by including the ability to move

cartridges between printers that are not completely full and still predict closely and the system of Naka would benefit in the combined system by allowing the user would be able to determine whether or not a print job could be completed without wasting any toner/ink.

4. Claims 5 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1, 2, 10, and 11 above, and further in view of Naka.

Regarding claim 5, which depends from claim 2, Tognazzini does not specifically teach that **the memory** for use in consumable related applications **is located upon the consumable.**

Naka teaches that **the memory** for use in consumable related applications **is located upon the consumable** (EEPROM 210 on ink cartridge 190, wherein the EEPROM is used to store and be accessed for consumable related applications [see Figs. 5-8]).

It would have been obvious to one of ordinary skill in the art that memory for use in consumable related applications could be located on the consumable itself. The motivation for doing so would have been to allow the information used in the applications to be used in multiple printers (col. 1 lines 35-37 of Naka). For example, if the consumable is moved to another printer, the data used associated with the consumable would be known to the new printer.

Regarding claim 14, which depends from claim 11, the structural elements of apparatus claim 5 perform all of the method steps of method claim 14. Therefore, claim 14 is rejected for the same reasons as stated above in the rejection of claim 5.

5. Claims 6 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1 and 10 above, and further in view of Naka.

Regarding claim 6, which depends from claim 1, Tognazzini teaches a form of **historical data regarding usage of the consumable responsive to the formation of hard images** (print counter, Fig. 4) for the past operations of a cartridge and **the processing circuitry is configured to use the historical data to perform the prediction operations** (used in predictive step 460, Fig. 4).

Tognazzini does not specifically teach **maintaining the historical data after the change of use.**

Naka teaches **maintaining the historical data after the change of use** (cartridge history and the ink total consumption amount, see Fig. 2 of Naka, are maintained throughout the life of the consumable as stored on the consumable, no matter where the cartridge is placed or how many different printers it is located [change of use]).

It would have been obvious to one of ordinary skill in the art to place cartridge history data on the cartridge itself as in Naka. For example, the ink capacity would translate as the threshold in Tognazzini and the ink total consumption amount would translate to the counter. The motivation for doing so would have been to allow the consumable to be used in more than once device and still have both devices be able to correctly predict if a job can be printed by the consumable.

Regarding claim 15, which depends from claim 10, the structural elements of apparatus claim 6 perform all of the method steps of method claim 15. Therefore, claim 15 is rejected for the same reasons as stated above in the rejection of claim 6.

6. Claims 8 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1, 7, 10, and 16 above, and further in view of Naka.

Regarding claim 8, which depends from claim 7, Tognazzini teaches completing prediction operations as well as the suspension of the operations if a change of use is indicated as discussed in rejections to parent claims.

Tognazzini does not specifically teach establishing confidence in the predictive data.

Naka teaches establishing confidence in the consumable data in Fig. 7, wherein when a new cartridge is loaded into the system, the system goes through a series of steps to determine what data is the correct consumable data, finally determined in steps S3-17 and 18.

It would have been obvious to one of ordinary skill in the art that in combining Tognazzini and Naka would include verifying the correctness of data stored in the consumable memory because that data is used in the predictive steps. The motivation for doing so would have been to allow the consumable to be used in more than once device and still have both devices be able to correctly predict if a job can be printed by the consumable. The combined system would want to verify the data (as in Naka) using the remaining ink amount to set the print counter in step 420 of Tognazzini before predictive step 460 is completed.

Regarding claim 17, which depends from claim 16, the structural elements of apparatus claim 8 perform all of the method steps of method claim 17. Therefore, claim 17 is rejected for the same reasons as stated above in the rejection of claim 8.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claim 10 above, and further in view of Naka.

Regarding claim 19, which depends from claim 10, Tognazzini teaches that **the indicating is responsive to the moving** of a cartridge into the system (when a cartridge is taken from one device and placed in the printer of Tognazzini, it is detected and verified by step 450 of Fig. 4, thus the indicating of a change of a new cartridge, no matter where it came from).

Tognazzini does not specifically teach **moving the consumable from a first image forming device to a second image forming device.**

Naka teaches **moving the consumable from a first image forming device to a second image forming device** (col. 1 lines 35-37).

It would have been obvious to one of ordinary skill in the art that the detecting of a consumable could be a new consumable as taught by Tognazzini or it could have been a consumable from another device, as taught by Naka. The motivation for moving one cartridge to another could have been to keep a vital printer operational by taking a consumable from a non-vital printer to allow for continued printing of the vital printer.

8. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1, 2, 10, and 11 above, and further in view of Klein (US 6035295).

Regarding claim 4, which depends from claim 2, Tognazzini teaches a system where a new cartridge is loaded (change of use), the old data that is remaining in the systems from predictive steps 460, 470, 610, and 620, is no longer valid and has a defect. Therefore if the system used such data, it would produce incorrect results.

Tognazzini does not specifically teach a **warning** associated with data that has a defect.

Klein teaches sending a warning associated with data that has a defect in Fig. 25B, steps 242 and 248.

It would have been obvious to one of ordinary skill in the art that the system of Tognazzini should not use the defected data and therefore a warning to not use the data would be appropriate as shown in Klein. The motivation for doing so would have been to keep the predictions accurate by not using data that is not up-to-date.

Regarding claim 13, which depends from claim 11, the structural elements of apparatus claim 4 perform all of the method steps of method claim 13. Therefore, claim 13 is rejected for the same reasons as stated above in the rejection of claim 4.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini in view of Naka and Klein.

Regarding claim 20, Tognazzini teaches a **method of providing consumable information comprising**

providing a consumable usable to form hard images (ink cartridge implied in printer 340; col. 4 line 36)**; and**

storing predictive data concerning usage of the consumable (Fig. 4, operations 410, 440, and 460 as well as Fig. 6, operations 610 and 620 are prediction operations with respect to the amount of ink left in the consumable) **to predict a likelihood that an image job will be imaged using the consumable** (step 620 determines whether the ink supply is too low to complete a job, thus print test routine is called [see Fig. 6]).

Tognazzini does not specifically teach that the memory for use in consumable related applications is located upon the consumable.

Naka teaches that **the memory** for use in consumable related applications **is located upon the consumable** (EEPROM 210 on ink cartridge 190, wherein the EEPROM is used to store and be accessed for consumable related applications [see Figs. 5-8]).

It would have been obvious to one of ordinary skill in the art that memory for use in consumable related applications could be located on the consumable itself. The motivation for doing so would have been to allow the information used in the applications to be used in multiple printers (col. 1 lines 35-37 of Naka). For example, if the consumable is moved to another printer, the data used associated with the consumable would be known to the new printer.

While the combination of Tognazzini and Naka teach a system where a new cartridge is loaded (change of use), the old data that is remaining in the systems from predictive steps 460, 470, 610, and 620, is no longer valid and has a defect and therefore if the system used such data, it would produce incorrect results, the combination does not specifically teach a **warning** associated with data that has a defect.

Klein teaches sending a warning associated with data that has a defect in Fig. 25B, steps 242 and 248.

It would have been obvious to one of ordinary skill in the art that the system of Tognazzini should not use the defected data and therefore a warning to not use the data would be appropriate as shown in Klein. The motivation for doing so would have been to keep the predictions accurate by not using data that is not up-to-date.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US-6471314, Doi, 10-29-2002: teaches a printing control method, printing device, printing control device and storage medium storing printing control program including predicting whether a job can be completed.

US-6266493, Farrell et al., 7-24-2001: teaches printing systems and methods including estimating consumable usage.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Divine whose telephone number is 703-306-3440. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KING Y. POON
PRIMARY EXAMINER

Lucas Divine

Examiner
Art Unit 2624

ljd